

## CALIFORNIA ENERGY COMMISSION

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April 19, 2013

Mr. Scott Galati  
Galati/Blek, LLP  
455 Capitol Mall, Suite 350  
Sacramento, CA 95814

**RE: PALEN SOLAR PROJECT AMENDMENT (09-AFC-7C)  
DATA REQUEST SET 2 (Nos. 19–39)**

California Energy Commission

**DOCKETED  
09-AFC-7C**

TN # 70404

APR. 19 2013

Dear Mr. Galati,

The California Energy Commission staff has reviewed the Petition for Amendment for the Palen Solar Electric Generating System and requires additional information to supplement the environmental analysis pursuant to Title 20, California Code of Regulations, section 1769(a)(1)(E). The California Energy Commission staff seeks the information specified in the enclosed Data Requests. The information requested is necessary to: 1) more fully understand the project; 2) assess whether the facility will be constructed and operated in compliance with applicable regulations; 3) assess whether the project will result in significant environmental impacts; 4) assess whether the facilities will be constructed and operated in a safe, efficient, and reliable manner; and 5) assess potential mitigation measures.

This set of Data Requests (Nos. 19-39) is being made in the areas of: Biological Resources (No. 19), Cultural Resources (Nos. 20-32), Socioeconomics (Nos. 33-34) and Visual Resources (Nos. 35-39). Staff requests that written responses to the enclosed Data Requests be provided on or before May 20, 2013. Staff encourages the Applicant to submit responses sooner if possible in order to facilitate the schedule.

If you are unable to provide the information requested, need additional time, or object to providing the requested information, please send a written notice to both the Committee and me within 20 days of receipt of this information request. The notification should contain the reasons for not providing the information and the grounds for any objections.

If you have any questions, please call me at (916) 654-4745, or email me at [christine.stora@energy.ca.gov](mailto:christine.stora@energy.ca.gov).

Sincerely,

Christine Stora  
Compliance Project Manager

Enclosure:  
Data Requests

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

**Technical Area:** Biological Resources  
**Author:** Ann Crisp

**BACKGROUND:**

**SAND TRANSPORT CORRIDOR**

The northeastern portion of both the approved project and the proposed amendment lies within the Palen Dry Lake–Chuckwalla sand transport corridor. The sand transport corridor is divided into different zones based on the amount of sand transported (Zone I to Zone IV). For the approved project, staff was particularly concerned about the biological impacts to the Mojave fringe-toed lizard (*Uma scoparia*) and the sand transport corridor from direct and indirect impacts of the project on sand dunes and the processes that support them. Direct impacts include direct loss of sand dune habitat and indirect impacts include disruption of the sand transport corridor resulting in downwind impacts to sand dune habitat. As described fully in Geomorphic Assessment and Sand Transport Impacts Analysis, Palen Solar Power Project (Appendix C) included in the Revised Staff Assessment for the approved project, staff developed a sand transport model (PWA Sand Transport Model) for the Palen site to simulate sand transport within the sand transport corridor. The wind fence that was included as part of the approved project was assumed to be a complete barrier to sand transport across the project site as part of the model. Direct impacts were calculated by assuming the entire sand transport corridor was lost within the project boundary. Staff modeled the indirect impacts to the sand transport zones, including impacts by percent reduction in sand input to areas downwind of the approved project. The approved project's Reconfigured Alternatives 2 and 3 substantially reduced intrusion into the sand transport corridor, including the more sensitive Zone II, compared to the other alternatives proposed for the approved project. Specifically, Reconfigured Alternative 2 would have resulted in approximately 1,503 acres of direct impacts and 144 acres of indirect impacts, while Reconfigured Alternative 3 would have resulted in approximately 1,542 acres of direct impacts and 94 acres of indirect impacts. Impacts to sand dune habitat from Reconfigured Alternatives 2 and 3 would have been mitigated to less than significant levels through Condition of Certification **BIO-20**.

The project owner has proposed as part of the modified project to eliminate the approved project's 30-foot tall wind fence which contributed to disruption of the sand transport corridor. However, the modified project would still have a project boundary fence (security fence) and desert tortoise exclusion fencing. Any fence design could impede sand transport and result in downwind impacts to sand dune habitat. In addition, sand that would have been transported across the project footprint from upwind would also be potentially cut off by storm drainage channels and diversion channels and above ground infrastructure that are proposed as part of the modified project. In Section 5.1.2, page 5.1-2 of the Supplement No. 1 for the Petition to Amend (Petition), the project owner states that the impacts to the sand transport corridor would decrease to 1,479.2 acres of direct impacts and 39.7 acres of indirect impacts. Based on discussions in the workshop on April 17, 2013, the project owner assumed indirect impacts to the sand transport corridor would be reduced for the modified project as the

## **PALEN SOLAR ELECTRIC GENERATING SYSTEM (09-AFC-7C) DATA REQUESTS – SET 2**

project owner assumed that the heliostats would function in the same manner as plants and allow sand to flow freely through the solar array. Indirect impacts were assumed for loss of habitat resulting from the 39.7-acre private parcel in Zone III that is not part of the modified project, but is nearly surrounded by the modified project's solar arrays. The project owner has not demonstrated how the modified project footprint, configuration, and components of the modified project will result in less indirect impacts to the sand transport corridor as compared to either the approved Alternative 2 or Alternative 3 footprint. The boundary of the modified project footprint within the sand transport corridor has a different shape compared to either Alternative 2 or Alternative 3. In addition, the configuration and components of the modified project have changed compared to either the approved Alternative 2 or Alternative 3. Solar parabolic troughs and related facilities have been replaced by solar power tower technology, including two solar power towers, heliostats, and other related facilities. These modifications to the project could change the transport of sand through the sand transport corridor. Staff intends to conduct an independent analysis of impacts using the PWA Sand Transport Model or similar model.

### **DATA REQUESTS:**

19. Impacts of Modified Project to Sand Dune Ecosystem. Please provide an analysis of the potential indirect impacts of project construction and operation (for example, alteration of hydrology, dust palliatives, project fencing, solar towers and associated power blocks and heliostat fields, etc.) of the modified project on creation and maintenance of sand dunes, partially stabilized sand dunes and any other habitats potentially occupied by Mojave fringe-toed lizard. Please provide an analysis of any potential direct and indirect impacts to the sand dune ecosystem and Mojave fringe-toed lizard from the modified project, compared to the approved project in terms of changes to site configuration, project facilities (two adjacent solar fields and associated facilities), construction, operation and maintenance activities (e.g. road and utility corridor maintenance and vegetation management such as mowing, etc.), and any other new project features/activities. Please define which model was used to determine indirect impacts and provide the model output. For the indirect impact analysis, define the impact area (eg. Zone I to Zone III from the approved project) used to determine impacts.

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

**Technical Area:**     **Cultural Resources**

**Authors:**             Michael D McGuirt, Amber Grady, and Thomas Gates

Where the disclosure of information on the location or the character of cultural resources may create a substantial risk of harm, theft, or destruction, one must submit such information under cover of an application for confidential designation pursuant to Title 20, California Code of Regulations, section 2505.

**ANALYTIC FRAMEWORK**

***Project Description***

**BACKGROUND**

Knowledge of the lateral and vertical extents of the various components of a proposed project is critical to the establishment of the appropriate framework for an environmental analysis. Specific data on the lateral extent, the height above ground, and the subsurface depth of different project components enable the environmental analyst to more tightly focus on the portions of a proposed project area that are germane to particular technical areas. Staff needs to know the complete complement of changes to the dimensions of the project that the amendment would entail, relative to the dimensions of the project as originally licensed. Staff therefore requests that the project owner draft and provide, at a minimum, a summary of any differences in gross subsurface design parameters, in both lateral and vertical dimensions, that would encompass the maximum anticipated extent of any differences in subsurface ground disturbance that the construction, operation, and maintenance of the amended project would cause. Staff believes it would be more efficient and cost-effective for the purpose of the cultural resources analysis, should the design data be available, to provide more specific information on any differences in the subsurface dimensions of the amended project. Such information may facilitate narrowing the scope of any subsurface investigations that may become necessary.

**DATA REQUEST**

20. Please draft and provide, with as much detail as the present state of the amended project's design will permit, a summary description of any changes to the lateral extent and the depth of each of the licensed project's components, the construction of which would entail excavation to a depth of greater than one meter below the present surface of the proposed amended project area. Alternately, please delineate and precisely describe a subsurface volume of ground beneath the present surface of the proposed project area that would encompass any anticipated changes to the subsurface lateral and vertical extents of each such component.

***Project Area of Analysis***

**BACKGROUND**

The "project area of analysis" (PAA) is a concept that staff employs to bound the geographic area in which staff believes that a proposed project has the potential to

## **PALEN SOLAR ELECTRIC GENERATING SYSTEM (09-AFC-7C) DATA REQUESTS – SET 2**

affect cultural resources. The effects that a project may have on cultural resources may be immediate, further removed in time, or cumulative. They may be physical, visual, auditory, or olfactory in character. The geographic area that would encompass a consideration of all such effects may or may not be one uninterrupted expanse. It may include a project area, which would be the site of the proposed plant (facility site), the routes of requisite transmission lines and water and natural gas pipelines, and other offsite ancillary infrastructure, in addition to one or several discontinuous areas where the project could potentially affect cultural resources.

The project description included in the Petition for Amendment (PSEGS 2012) states that the project will no longer use the parabolic trough technology, as originally licensed, but will instead use solar power towers, associated power blocks, and heliostat fields. After review of the petition and a site visit to the project site and surrounding area, staff has determined that the previous PAA is not adequate to analyze the potential effects that could occur, given this change in technology. Specifically, switching from relatively low profile parabolic troughs to two, 750-foot tall power towers has the potential to affect cultural resources much farther away; therefore, the PAA clearly needs to be expanded. Staff has observed in the field that the project will be plainly visible from at least 12 miles away. Therefore, staff has determined that, in order to adequately evaluate the new potential effects of the amended project, the revised PAA should probably include all visible areas within approximately 15 miles of the project area boundary. Staff believes that this would constitute the geographic area across which the project may have the potential to cast significant visual effects on cultural resources. Figure 1 is a rough approximation of this area. The archaeological, ethnographic, and built-environment components of the PAA for the amendment vary with respect to the differences in the character of the inventory for each of these resource types and are addressed separately below.

### **DATA REQUEST**

21. Staff has sketched out, in relatively broad strokes, a preliminary concept of what staff believes is the appropriate PAA for the proposed project. Please refine the concept that staff has set out, both above and below, adjust it on the basis of explicit argumentation, and plot out the boundaries of the project owner's iteration of the resultant PAA on a map of no less than a 1:24,000 scale. The project owner's iteration should include a delineation of the original project boundary and the new project boundary. Those areas from which the power towers will not be visible may be eliminated from the approximate 15-mile radius depicted in Figure 1. Please provide explicit justifications to support areas eliminated in this manner. The PAA is and will remain the fundamental basis for all subsequent requests for information related to the potential effects of the amended project on cultural resources. Staff's preliminary reiteration of it here is the foundation for the present cultural resources data requests. If the project owner's concept of the PAA differs significantly from staff's, staff would encourage the project owner to notify staff and, at the earliest possible date, seek to publicly resolve any substantive differences of opinion.

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

**ARCHAEOLOGICAL INVENTORY**

***Facility Site Inventory for Analysis of Physical Effects***

**BACKGROUND**

Staff is not entirely clear that the cultural resources inventory for the amended project's physical footprint is complete. The cultural resources inventory for the bulk of the facility site has been drawn from the class III (100 percent) pedestrian archaeological surveys that were done in conjunction with the original licensing of the project. The fieldwork for those surveys (Tennyson and Apple 2010, and Tennyson 2010) was done in 2009 and 2010. The portion of the amended project area that includes the westerly shift of the proposed project's generation tie transmission line is said by the project owner (PSEGS 2012:5.3-1) to have been surveyed before September 2010 for the Desert Sunlight Solar Farm Project (ECORP 2010). Staff is not aware, as of the publication date of the present requests, whether the project owner has provided the report for the Desert Sunlight survey for staff's review. The project owner acknowledges that the 1.8-mile natural gas pipeline route for the amended project has not been subject to survey and notes that such a survey can be completed, if necessary (PSEGS 2012:5.3-4).

Staff needs this basic information on the inventory of the cultural resources, particularly the archaeological resources, in the amended project's physical footprint that would potentially be subject to the direct physical effects of project construction and operation. This information would include the results of class III pedestrian archaeological surveys of the natural gas pipeline corridor and the corridor into which the generation tie transmission line has shifted. In addition, staff believes that the environmental context of the project area needs to be taken into account as the amendment to the licensed project undergoes consideration. The majority of the project area is spread across the sandy mid- and distal reaches of an alluvial fan system that emanates from the Chuckwalla Mountains approximately five miles to the southwest. The northeastern periphery of the project area reaches out into the dune fields and playa bottoms of lower Palen Dry Lake. Surface sediments, primarily sand, tend to be highly mobile and to rapidly expose and rebury archaeological deposits. Staff believes that the project owner would benefit from verifying that the original survey snapshot that was taken for the licensed project area, a snapshot that was a result of the pedestrian archaeological fieldwork of 2009 and 2010, did in fact provide a representative sample of the archaeological inventory there.

**DATA REQUESTS**

22. Please design and conduct a class III pedestrian archaeological survey, per the Energy Commission's siting regulations, of the natural gas pipeline corridor that would be associated with the construction and operation of the amended project.
23. Please submit a technical report of the above class III pedestrian survey for staff's review and approval.



**PALEN SOLAR ELECTRIC GENERATING SYSTEM (09-AFC-7C)  
DATA REQUESTS – SET 2**

24. Please design and conduct a class II pedestrian archaeological survey of the original project area sufficient to verify the statistical validity of the cultural resources inventory for the project area as documented in 2009 and 2010.
25. Please submit a technical report of the above class II pedestrian survey for staff's review and approval.
26. Please submit a copy of the 2010 ECORP pedestrian archaeological survey for the Desert Sunlight Solar Farm Project, or another technical report for the portion of the amended project area that encompasses the corridor for the generation tie transmission line. The submitted report should conform to the Energy Commission's siting regulations with regard to such documentation.

***Extra-facility Site Inventory for Analysis of Setting Impacts***

**BACKGROUND**

The addition of two, 750-foot tall solar power towers to the licensed project stands to significantly increase the visibility of the project across that portion of Chuckwalla Valley, relative to the visibility of the project if it had been built as originally licensed. The project owner acknowledges (PSEGS 2012:5.3-4) that the amended project would be more visible and proposes to conduct, in consultation with Native Americans and other stakeholders, a series of key visual simulations of prominent and known ethnographic and archaeological resources for use in the development of mitigation measures, where such measures appear warranted. Borrowing terminology from the visual resources discipline, the project owner identifies a number of known places as being candidates for an ultimate set of key observation points. These prominent and known places include Alligator Rock, a landform; Corn Springs, McCoy Springs, and North Chuckwalla Mountains Petroglyph District, archaeological resources with rock art components; Palen Dry Lake ACEC, a prehistoric archaeological resource area; a Cocomaricopa Trail segment; and an unspecified set of Desert Training Center archaeological deposits, historical archaeological resources. As a proposal for an initial set of resources to include as part of the broader analysis of the potential character of the amended project's impacts on the setting of these cultural resources, the project owner's proposal would be fine. Staff needs this information as soon as possible, in addition to information that reports the results of more comprehensive efforts to identify and analyze archaeological resources that may be subject to the setting effects of the amended project.

The geographic area across which the amended project's 750-foot tall solar power towers would visually intrude is far larger than the area that would have been subject to the setting impacts of the licensed solar trough project. Staff believes, therefore, that efforts to identify and analyze the visual effects of the amended project on archaeological resources would be warranted for less prominent or entirely unknown archaeological resources, where such resources may be subject to the degradation of their historic integrity. Visual degradation of resource integrity has the potential to compromise the ability of archaeological resources to convey their significance, where

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

such resources are determined to be significant for their associative or artistic values (Criteria 1 and 3) under the California Register of Historical Resources (CRHR). More specifically, staff needs to know whether the amended project threatens to visually degrade the integrity of such archaeological resources on the flanks of the Palen Mountains to the northeast of the proposed facility site and on the flanks of the Coxcomb Mountains to the north-northwest of the facility site. Staff believes that any archaeological resources eligible for listing in the CRHR under Criteria 1 or 3 in that geographic proximity to the facility site may potentially be subject to significant visual degradation from the amended project. Areas further afield from the facility may also harbor archaeological resources that would be subject to the same type of degradation, but staff believes that the analysis of the visual effects to archaeological resources over any broader area beyond the southern Palen and Coxcomb mountains would constitute an unreasonable burden on the project owner.

**DATA REQUESTS**

27. Please design and conduct reconnaissance pedestrian (class II) surveys of the portions of the southwestern Palen Mountains<sup>1</sup> and of the southern Coxcomb Mountains<sup>2</sup> that fall within sight of the solar power towers for proposed Units 1 and 2 of the amended project. The relatively exclusive focus of the surveys should be archaeological resources that have the potential to be eligible for listing in the CRHR under Criteria 1 and 3. Such resources would typically include, but would not be limited to, rock art, intaglios, caves that may evidence ritual use, apparent altars or shrines, cleared circles, rock cairns, and trail segments. An archaeological deposit that may represent locally atypical economic behavior may also qualify for consideration for its associative value as well as its inherent information value. Staff is aware that the majority of these survey areas are in remote places that lack vehicular access.
28. Please submit technical reports of the above reconnaissance pedestrian surveys for staff's review and approval.

**ETHNOGRAPHIC INVENTORY**

**BACKGROUND**

The Chuckwalla Valley is a major prehistoric and ethnographic transportation corridor. The Halchidoma Trail or Coco Maricopa Trail system provided transportation routes

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<sup>1</sup> Staff envisions that the areal scope of the Palen Mountains reconnaissance be limited to the portions of the mountains in Secs. 13, and 24–26, T. 4 S., R. 17 E. and east of those sections into the unsectioned areas of T. 4 S., R. 18 E.; in Secs. 1 and 13, T. 5 S., R. 17 E., and east of those sections into the unsectioned areas of T. 5 S., R. 18 E.; and north of Secs. 31–33, T. 5 S., R. 18 E. into the unsectioned portions of that township.

<sup>2</sup> Staff envisions that the areal scope of the Coxcomb Mountains reconnaissance be limited to the portions of the mountains in Secs. 11 and 14, T. 4 S., R. 16 E. and northwest of those sections into the unsectioned areas of that township; in Sec. 22, T. 4 S., R. 16 E., and north of that section into the unsectioned areas of that same township; and in Sec. 16, T. 4 S., R. 16 E. and northeast into, again, the unsectioned portions of that township.



## **PALEN SOLAR ELECTRIC GENERATING SYSTEM (09-AFC-7C) DATA REQUESTS – SET 2**

between the Los Angeles Basin and the Phoenix Basin. Along this east-west axis, many north-south trending connector trails crossed or merged with the more prominent east-west trail system. Trails likely provided transportation routes from the north through Clarks Pass or Pinto Basin Pass, Granite Pass, and Palen Pass. From the south, likely routes would have included the Corn Springs Canyon, Graham Pass, and various avenues through and from the south of the Mule Mountains. Likely routes would have also linked places of water that might have included Buzzard Spring, Hayfield Summit Spring, Corn Spring, Chuckwalla Spring, Mule Tank, McCoy Spring, and Tank Spring. Beyond these two trail predictors, passes and water sources, trails connected travelers to seasonal camping places, hunting and gathering areas, lithic quarry sources, and ceremonial places. Staff needs to know trail locations in order to assess project effects to remnant segments, and to derive a predictive basis for the identification of sites, places, and areas that may be associated with those segments and on which project effects may also need to be assessed.

### **DATA REQUESTS**

29. Please conduct a records search at the Eastern Information Center for all prehistoric linear sites recorded in the new PAA described above or modified in response to these data requests. Please copy, convert to PDF, and provide staff with electronic copies of all site records. Please also include a list, in ascending order, of all site records retrieved.
30. Please conduct an ethnographic, ethnological, ethno-historical literature search, which includes the use of historic maps, for prehistoric and ethnographic linear features in the new PAA described above or modified in response to these data requests. Some sources that may have relevant trail information are provided here<sup>3</sup>, but they should not be treated as an exhaustive compilation. Please provide PDF copies of pertinent sections of documents that provide information on trail locations in the new PAA described above or modified in response to these data requests. Please provide staff with a bibliography of all sources retrieved.

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<sup>3</sup> BLM GLO maps  
Alderson 1976  
Apple 2005  
Bean et al. 2004  
Bean and Toenjas 2012  
Cleland 2004  
Davis 1961  
Johnston 1980  
Johnston and Johnston 1957  
Laird 1976  
Lyneis et al. 1980  
McCarthy (Appendix c) in Carrico and Gallegos 1982  
McCarthy 1993  
Roth 1977  
Sample 1950  
von till Warren et al. 1980  
von till Warren 1981

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

31. Please produce and provide GIS coverages for all prehistoric and ethnographic linear features that are found as the result of the above research, and provide staff with both electronic copies of the subject coverages and hard copy maps of no less than a 1:24,000 scale to depict the various prehistoric and ethnographic linear resources documented.

**BUILT-ENVIRONMENT INVENTORY**

**BACKGROUND**

Due to the significant increase in the visual effect of the amended project, staff needs additional built-environment data in order to develop that portion of the cultural resources analysis for the preliminary staff assessment.

**DATA REQUEST**

32. Please provide a map showing the boundaries of the previous records search overlaid on the new PAA described above or modified in response to these data requests. Please obtain a records search update from the Eastern Information Center for the new PAA. Those areas that were previously researched can be updated to include any new information filed since the original records search for the licensed project, while areas outside of the previous search should be subject to a new comprehensive records search. Please provide, per the Energy Commission's siting regulations, copies of all site records and requisite reports in the new PAA that were not previously provided during the original licensing process.

**PALEN SOLAR ELECTRIC GENERATING SYSTEM (09-AFC-7C)  
DATA REQUESTS – SET 2**

**REFERENCES**

The “(tn: 00000)” in a reference below indicates the transaction number under which the item is catalogued in the Energy Commission’s Docket Unit. The transaction number allows for quicker location and retrieval of individual files.

**BLM Government Land Office (GLO) Maps** – Various editions

**Alderson 1976 – Alderson, William D.** An Aboriginal Trail Complex in the Big Maria, Little Maria, McCoy and Mule Mountains of the Central Colorado Desert: A Preliminary Survey. Available at the Eastern Information Center, RI-1038 1081128.

**Apple, Rebecca M. 2005.** Pathways to the Past. *Proceedings of the Society for California Archaeology, Volume 18.* Society for California Archaeology, Riverside, California.

**Bean, Lowell John, Sylvia Brakke Vane, Henry F. Dobyns, M. Kay Martin, Richard W. Stoffle, and David R.M. White. 1978.** *Persistence and Power: A Study of Native American Peoples in the Sonoran Desert and the Devers-Palo Verde High Voltage Transmission Line.* Prepared by Cultural Systems Research, Inc. for Southern California Edison Company.

**Bean and Toenjes 2012 – Bean, L.J. and J. Toenjes.** Chapter 3, Native American Ethnographic Context. In Chuckwalla Valley Prehistoric Trails Network Cultural Landscape: Historic Context, Research Questions, and Resource Evaluation Criteria. Prepared for the California Energy Commission.

**Cleland, James H. 2004.** “Ethnographic Trail Systems and Large-Scale Cultural Landscapes: Preservation and Management Issues”. *Exploring the Boundaries of Historic Landscape Preservation: Proceedings of the Twenty-ninth Annual Meeting of the Alliance for Historic Landscape Preservation, Athens.* Cari Goetcheus and Eric MacDonald. Clemson University Digital Press, Clemson, South Carolina.

**Davis 1961 – Davis, J.T.,** “Trade Routes and Economic Exchange Among the Indians of California.” University of California Archaeological Survey Reports, No. 54, Berkeley.

**ECORP 2010—ECORP Consulting, Inc.** *Class III Cultural Resources Inventory of the Desert Sunlight Solar Farm Project, Desert Center Vicinity, Riverside County, California.* Volume I Technical Report. September 2010, Redlands.

**Johnston 1980 – Johnston, F.J.,** “Two Southern California Trade Trails,” *Journal of California and Great Basin Anthropology*, vol. 2, pp. 88-96.

**Johnston and Johnston 1957 – Johnston, F.J. and P.H. Johnston,** “An Indian Trail Complex of the Central Colorado Desert: A Preliminary Survey,” *Reports of the University of California Archaeological Survey*, vol. 37, pp. 22-41.

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

**Laird 1976 – Laird, C.** The Chemehuevis. Banning, CA. Malki Press.

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**McCarthy 1982 – McCarthy, D.** "The Coco-Maricopa Trail Network." In Cultural Resource Inventory and National Register Assessment of the Southern California Edison Palo Verde to Devers Transmission Line Corridor (California Portion), Appendix C, R.L. Carrico, D.K. Quillen, and D.R. Gallegos, Report prepared for U.S. Department of the Interior, Bureau of Land Management, by Westec Services, San Diego.

**McCarthy 1993 – McCarthy, D.** Prehistoric Land Use at McCoy Spring: An Arid-Land Oasis in Eastern Riverside County, California. Master's Thesis, University of California Riverside.

**PSEGS 2012—Palen Solar Electric Generating System.** Palen Solar Holdings, LLC/Galati Blek (tn: 68910) Petition to Amend, December 2012.

**Roth 1977 – Roth, G.** "The Calloway Affair of 1880: Chemehuevi-Mohave Relations." Journal of California Anthropology. vol. 4, no. 2, pp. 273-286.

**Sample 1950 – Sample, L.L.** "Trade and Trails in Aboriginal California." University of California Archaeological Survey Reports, No. 8. University of California, Berkeley: Department of Anthropology, 1950.

**Tennyson 2010—Tennyson, Matthew.** *Addendum 1, Cultural Resources Class III Report for the Proposed Palen Solar Power Project, Riverside County, California.* AECOM, San Diego, August 2010.

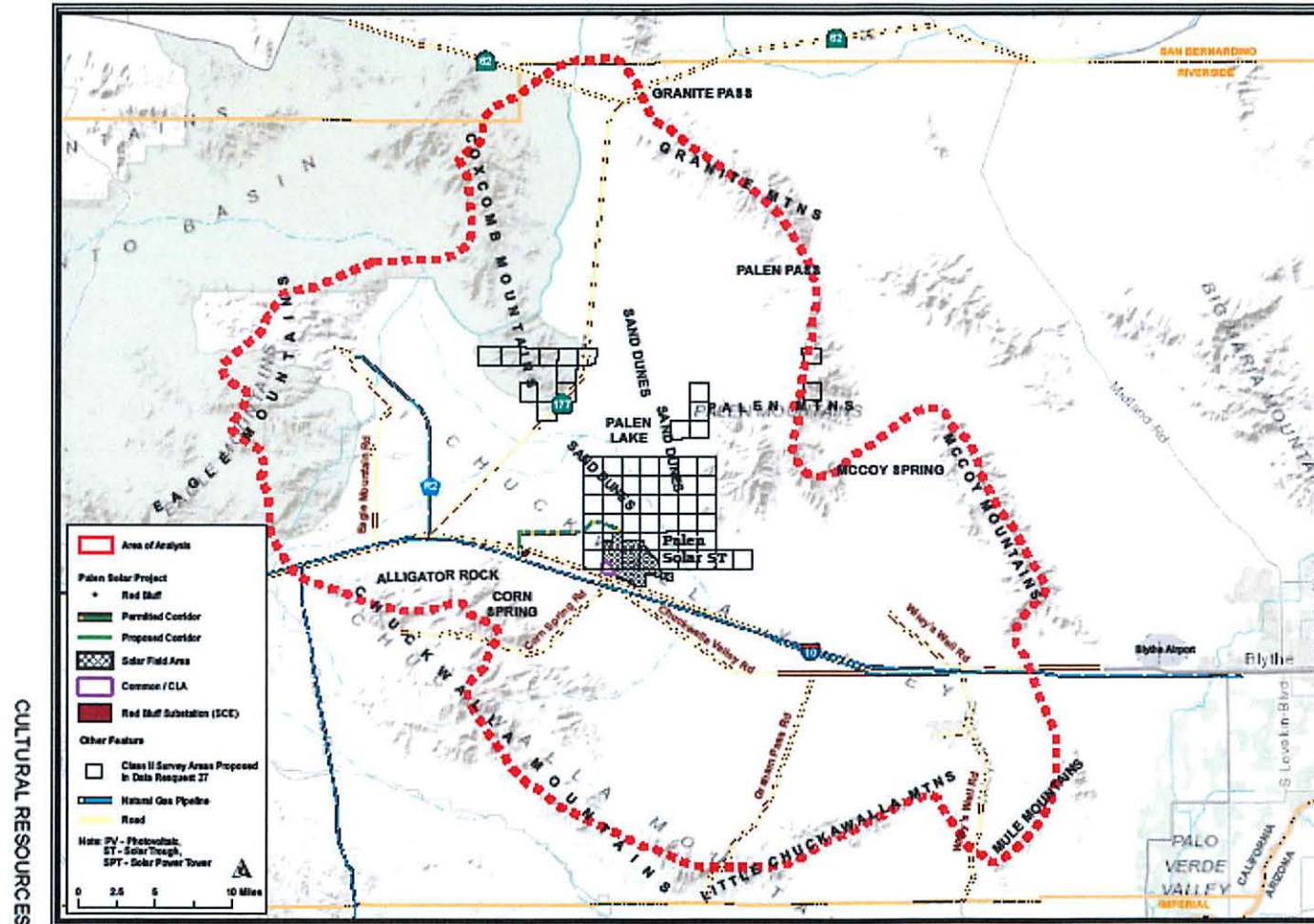
**Tennyson and Apple 2010—Tennyson, Matthew and Rebecca Apple.** *Cultural Resources Class III Report for the Proposed Palen Solar Power Project, Riverside County, California.* EDAW/AECOM, San Diego, February 2010.

**von Till Warren et al. 1980. – von Till Warren, E. R.H. Crabtree, C.N. Warren, M. Knack, and R. McCarty.** A Cultural Resources Overview of the Colorado Desert Planning Unit, Report prepared for U.S. Department of the Interior, Bureau of Land Management Riverside, CA.

**von Till Warren 1981 – von Till Warren, E.** Cultural Resources of the California Desert, 1776-1880: Historic Trails and Wagon Roads

# PALEN SOLAR ELECTRIC GENERATING SYSTEM (09-AFC-7C) DATA REQUESTS – SET 2

**CULTURAL RESOURCES - FIGURE 1**  
Palen Solar Electric Generating System - Initial Staff Project Area of Analysis (PAA)



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION  
SOURCE: California Energy Commission Statewide Power Plant, DeLorme Topographic World Basemap, ESRI World Topo, CEC Staff

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

**Technical Area:** Socioeconomics  
**Author:** Aaron Nousaine

**BACKGROUND: ECONOMIC IMPACTS ANALYSIS**

The PSEGS Petition to Amend presents estimates of the employment and labor income effects of the proposed project modifications generated using the IMPLAN economic impact software. To assess the reliability of the reported economic impact estimates, staff requires a clear explanation of the assumptions and input values used in the IMPLAN economic model, as well as a budget for project construction and operation that is as detailed as possible, based on the available estimates. Where appropriate, the applicant may submit this information with a request for confidentiality.

**DATA REQUEST**

33. Please provide a complete description of the input values and other assumptions used in the IMPLAN economic model for construction and operation of the PSEGS. Completeness will be evaluated based on staff's ability to recreate the applicant's findings using the information provided. This should include, at minimum, identification of the applicable event types, IMPLAN industry sectors, model input values (i.e. total industry sales, employment, employee compensation, proprietor income), event years, and local purchase percentages. Also, please identify the vintage and geographic extent of the IMPLAN data used in the analysis.
34. Please provide a project budget for construction and operation that identifies, to the extent possible, all major expenditures on project related labor, equipment, and materials. Labor cost estimates should include associated employment numbers reported in job-years.<sup>4</sup> Where possible, please differentiate between expenditures, such as building construction, which would occur within Riverside County, and the purchase of heliostats and the solar receiver steam generators, which would occur outside of Riverside County.

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<sup>4</sup> One job-year is the equivalent of one full-time job held for a period of one year. For example, this could equal one full-time job held for 12 months, two full-time jobs held for six months, three full-time jobs held for four months, or two half-time jobs held for one-year, and so on.



**PALEN SOLAR ELECTRIC GENERATING SYSTEM (09-AFC-7C)  
DATA REQUESTS – SET 2**

**Technical Area:** Visual Resources  
**Author:** William Kanemoto

**BACKGROUND**

Glare from the solar receivers is anticipated to be a significant for the project.

**DATA REQUEST**

35. Please provide the predicted luminance of the solar receiver steam generators from each of the Key Observation Points (KOPs), including those described in Data Request 39, below.

**BACKGROUND**

Inadvertent direct solar reflections off of the heliostats while in stow or cleaning positions, or in transition to and from stow or cleaning positions, could potentially result in 'glint' impacts to observers on the ground, including motorists and recreationists.

**DATA REQUEST**

36. Please discuss the extent to which heliostat positioning algorithms will be capable of avoiding inadvertent direct solar reflections to off-site ground observers. If such off-site reflections cannot be avoided, please describe these conditions, including the potential extent (areas of potential exposure) and frequency of visible off-site 'glint' (direct solar reflection).

**BACKGROUND**

To facilitate preparation of the Staff Assessment, and to conduct its analysis, staff requires high-resolution image files of photographs in the Application of Certification visual analysis located at

<http://www.energy.ca.gov/sitingcases/palen/documents/applicant/afc/5.15%20%20Visual.pdf>.

**DATA REQUEST**

37. Please provide high-resolution image files of individual photos for the Amendment Supplement, including simulations and character photos, in jpg or tif format. Please do not provide 'paired' before and after page layouts, but rather the individual image files at a resolution suitable for printing in ledger-size format (11"X17").

**BACKGROUND**

The simulations provided in Amendment Supplement 2 are shown as parts of wider photo panoramas. Consequently the actual field of view of the simulations is not known, and the actual visual scale and magnitude of the simulated views cannot be determined or evaluated.

38. Please specify the camera model and lens focal length setting for the photographs used in each of the KOP simulations. Please specify the horizontal angle/field of view of each of the simulations and describe how these values were determined.

**PALEN SOLAR POWER PROJECT (09-AFC-7C)  
DATA REQUESTS – SET 2**

**BACKGROUND**

To complete its analysis, staff requires simulations of representative KOPs within affected Wilderness Areas similar to those provided in the Revised Staff Assessment for the Palen Solar Power Project (<http://www.energy.ca.gov/2010publications/CEC-700-2010-007/CEC-700-2010-007-REV-PT1.PDF> and <http://www.energy.ca.gov/2010publications/CEC-700-2010-007/CEC-700-2010-007-REV-PT2.PDF>).

**DATA REQUEST**

39. Please provide simulations from two additional KOPs, corresponding to KOPs 4 (Figure 7B, elevated view from the Palen-McCoy Wilderness; Data Response VIS-255-1b) and 5 (Figure 8B, elevated view from within Chuckwalla Mountains Wilderness; Data Response VIS-256-1b) of the Revised Staff Assessment for the Palen Solar Power Project. Along with the simulations, please provide the 35mm camera focal length equivalent, and/or the actual horizontal angle of view, of the photos used.

## **REFERENCES**

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**Clayton 2010 – Clayton, Michael.** Revised Staff Assessment Part 2, Visual Resources  
C.12. California Energy Commission, September 2010





**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT  
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1516 NINTH STREET, SACRAMENTO, CA 95814  
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**AMENDMENT**

**FOR THE PALEN SOLAR ELECTRIC  
GENERATING SYSTEM**

**Docket No. 09-AFC-7C**

**PROOF OF SERVICE**

**(Revised 3/26/13)**

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Eileen Allen  
Commissioners' Technical  
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### DECLARATION OF SERVICE

I, Christine Stora, declare that on April 19, 2013, I served and filed copies of the attached\_ Data Request Set 2 (Nos. 19-39), dated April 19, 2013. This document is accompanied by the most recent Proof of Service, which I copied from the web page for this project at: <http://www.energy.ca.gov/sitingcases/palen/compliance/>.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service) and to the Commission's Docket Unit, as appropriate, in the following manner:

**(Check one)**

**For service to all other parties and filing with the Docket Unit at the Energy Commission:**

☒

I e-mailed the document to all e-mail addresses on the Service List above and personally delivered it or deposited it in the US mail with first class postage to those parties noted above as "hard copy required"; **OR**

☐

Instead of e-mailing the document, I personally delivered it or deposited it in the US mail with first class postage to all of the persons on the Service List for whom a mailing address is given.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: April 19, 2013

Christine Stora